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Digital atmosphere of fashion retail stores

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Abstract

This study sheds light on a prominent issue in retailing: how the digital atmosphere can affect the consumer decision-making process in a fashion retail store. Digital devices and services such as digital screens and digital signage are widely employed in fashion retail stores, transforming the way consumers make decisions about purchasing fashion products. This research investigates how the digital atmosphere affects consumers' purchase behavior patterns based on the attention-interest-desire-search-action-share (AIDSAS) model. The findings show that attention is a key antecedent to interest, desire, and behavioral responses (search, action, and share) triggered by the digital atmosphere. The findings further suggest that attention has significantly positive effects on consumers' purchasing patterns of utilizing the digital atmosphere in two types of fashion retail stores: sports and luxury stores. However, we find that these positive effects are more pronounced for sports retail stores than luxury retail stores. This research contributes to understanding consumer behavior related to the digital atmosphere of fashion retail stores by applying the AIDSAS model and helps uncover the stepwise relationships between attention to the store atmosphere-interest/desire and the products-behavior response. These findings have practical implications that can be applied in the fashion industry.

Keywords: Digital atmosphere, AIDSAS model, Retail technology, Consumer behavior

Introduction

Radical development and proliferation of information and communication technology (ICT) have transformed the way people interact, connect, and communicate, not only with other people but also with their surroundings and business environments (Pantano and Viassone 2014; Henke et al. 2016). ICT refers to technology that enables access to information through telecommunication and can be implemented based on a medium that enables communication with others, such as the Internet, mobile phone, and digital devices (Zhang et al. 2008). Digital devices and services, such as smartphones, digital screens, cloud services, and electronic transfer of information between objects (e.g., smart home services and Amazon dash buttons) have already been an integral part of managing and organizing people's everyday lives (Mitrea et al. 2010; Henke et al. 2016). In addition, the increasing adoption of ICT by traditional industries (i.e., convergence) has further transformed the way people interact with products, brands, and companies (Pantano 2014).

The retail industry has been riding the wave of ICT-driven transformation by integrating ICT into retail stores to enhance communication and interaction with consumers. For example, numerous retail stores have adopted digital kiosks allowing consumers to easily check the location and the level of inventory of an item by themselves. Digital signage such as digital displays and touch screens are also popular ICT devices in retail stores (Dennis et al. 2010; Kent et al. 2018). For example, some ICT services in stores allow shoppers to virtually try on clothing to conveniently check size, fit, or style, and then pay immediately after trying it on (Roggeveen et al. 2016). A retail environment with interactions and experiences that are enhanced through these ICT applications is defined as the digital atmosphere (Inman and Nikolova 2017).

Recent literature points to the significant role of the retail atmosphere in shaping key aspects of consumer decision making in stores (Grewal et al. 2017). Retailers have increasingly employed various sensory elements such as color, music, and scent to attract consumers' feelings, perceptions, and behavior in their stores (Donovan et al. 1994; Grewal et al. 2014; Spence et al. 2014). Given the increasing significance consumers place on the overall experience in decision making, retailers have endeavored to enhance consumers' in-store experiences by offering fun, unique, idiosyncratic, immersive, and interactive engagement (Cearley et al. 2017). Most recently, retailers have adopted digital devices and ICT technologies, such as digital kiosks, virtual mirrors, self-checkout, and augmented reality in offline stores. These innovations allow consumers to choose items, try them on, and coordinate various items with a simple touch (Dennis et al. 2012; Duncan et al. 2016).

Retailers have also utilized ICT to integrate operations of different retailer channels to offer consumers more streamlined experiences (Verhoef et al. 2015). For example, a touch screen, self-service kiosk in an offline store allows consumers to return items that were purchased online and/or through mobile channels (Piotrowicz and Cuthbertson 2014). These digital devices installed in store can also integrate retail channels into a system that shares data. For instance, consumers can easily transmit information acquired from the in-store digital devices to their mobile devices with only a few taps on the digit al screen, thus promoting online world-of-mouth behavior (Dennis et al. 2013, 2014).

Despite the significant transformation of the retail environment using in-store digital devices, systematic research investigating the effects of stores' digital atmosphere on consumer behavior is still sparse. The prominent trends and increasing investment in exploring ways to enhance the consumer experience with ICT applications in store call for further studies investigating how a store's digital atmosphere impacts the way consumers evaluate and form behavioral intentions while shopping in retail stores. This study aims to fill this void. In particular, the current study examines how the digital atmosphere, which is widely employed in fashion retail stores, affects consumers' purchase behavior patterns in two different retail contexts: sports (e.g., Adidas) and luxury (e.g., Burberry) brands in fashion retail stores. Sports and luxury brands are chosen because they are in the two most significant merchandise categories that have been most affected by the adoption of ICT technologies in a retail environment.

This study is organized using the following structure. First, we review the literature used to build our conceptual framework and hypotheses. We then present the data

collection methods and analyses. Lastly, we discuss our results along with the conceptual and practical implications of the study.

Literature review

Digital atmosphere in fashion retail stores

"Atmospherics" is a practice that recognizes that a marketing environment should be carefully sculpted to induce particular behaviors and evaluations from consumers, and it should appeal to a specific target market (Turley and Bolton 1999). The space created through atmospherics is the store's atmosphere. It is important for retailers to create the appropriate atmosphere to induce consumers' desirable thoughts and feelings about the brands (Kotler 1973; Chebat and Dubé 2000). The store atmosphere is particularly critical for product categories where purchase decisions are affected by in-store experiences in addition to product attributes, such as clothing (Donovan et al. 1994). As such, researchers have paid considerable attention to understanding how experience-focused consumption decisions are affected by sensory variables in the store such as the choice of music (Yalch and Spangenberg 2000; Mattila and Wirtz 2001; Areni 2003), scent (Mattila and Wirtz 2001; Michon et al. 2005), layout (Smith and Burns 1996), lighting (Summers and Hebert 2001) and color (e.g., Babin et al. 2003). It is also becoming more common that retailers incorporate information and communication technology into creating a retail atmosphere that enhances the in-store experience, referred to as the "digital atmosphere."

For instance, Neiman Marcus introduced a new technology called "Memory Mirror," which allows customers to see outfits from various angles and remembers what customers have already tried on. Adidas is offering an "Adidas Wall," a three-dimensional interactive screen that shows a whole range of products and enables customers to quickly search for shoes and make purchases. More fashion retailer digital atmosphere innovations include "Window Shopping" for Tommy Hilfiger, "Interactive Fitting Room" for Rebecca Minkoff, and "Magic Mirror" for Top Shop to make the shopping experience more convenient for consumer. Burberry was praised for its success by creating a technological digital atmosphere with large digital displays and touchscreens at its flagship store in London. Retailers have also found that adding digital devices to the environment stimulates and amplifies the senses and feelings together with color, sound, and scent. These cases of digital displays using magic mirrors and touch screens are all types of digital signage that are used as an influential tool to determines the digital atmosphere in the store. However, there is a lack of research on the effect of a digital atmosphere in fashion retail stores on consumers' purchasing decision-making process.

Extended model of AIDSAS

To systematically investigate consumer behavior in a digital atmosphere, we use the attention-interest-desire-search-action-share (AIDSAS) model as our conceptual framework modified from the AIDA model proposed by Hall (1924). The AIDA, a classic promotional theory in marketing, posits that the consumers make behavioral decisions after they go through the attention-interest-desire process. The AIDA model has mainly been used to identify the effectiveness of promotion and advertising. It has recently become well-known in academia and practice and has been widely applied in the marketing field

(Strong 1925; Wiyaya 2012; Hassan et al. 2015). When consumers pay attention to a product or brand, they perceive the product with interest. In this process, they evaluate the product based on their desire and then take action.

The AIDA model has been modified and applied in research with changes in consumer purchasing behavior resulting from ICT development (e.g., Wiyaya 2012; Wei and Lu 2013). Current consumers tend to be much more information savvy than before. They search and collect information from multiple channels, particularly from the Internet, to compare prices and search for alternative products from other brands before making a purchase (Kotler and Armstrong 2010; Sugiyama and Andree 2010). The critical facet of the Internet and social media is sharing of opinions. Consumers are also more willing and even eager to share their experiences about products on social networking sites (SNS) (Solomon 2018). Millennials prefer to record their everyday experiences on SNS, and are not offended to communicate with other users by clicking the Like button and/or commenting on certain newsfeeds (Solomon 2018). Thus, retailers must pay attention to consumers' behavior of sharing their experiences about brands and/or products on SNS. Hence, the original AIDA model was modified to the attention, interest, search, action, and share (AISAS) model by adding search and share (Sugiyama and Andree 2010). Because "desire" in Hall's (1924) model is considered a precedent that makes the intention of the action stronger, this study adopted a modified model by adding "desire" to the AISAS model, to create AIDSAS.

Large-scale use of digital signage in fashion retail stores evokes a digital atmosphere within the store to improve the in-store experience by providing information about products that will help consumers search and make decisions (Burke 2009; Dennis et al. 2010). This leads consumers to think about how to use digital signage, which will impact on consumers' cognition processes. The AIDA model has helped identify the effect of a digital atmosphere on consumer behavior in stores with digital signage.

Hypotheses development

Studies have indicated that the store atmosphere affects the mental and emotional state of consumers while shopping and influences momentary and immediate behaviors in the store (Donovan Rossiter 1982). Recently, it is important to note that among the various forms of ICT technologies incorporated into the retail atmosphere, digital signage, such as LED billboards, and digital or touch screens dispensing product information, has been the most prevalent adoption strategy in fashion retail stores (Kim and Sung 2016; Kent et al. 2018), and its application in stores is growing fast (Roggeveen et al. 2016).

Utilizing digital technology in retail stores could also help enhance consumer satisfaction, brand trust, and brand value, and give consumers a positive perception of the products and retail stores (Inman and Nikolova 2017). Past studies have indicated that the store atmosphere is a particularly important factor for retailers to consider because consumers are more likely to purchase products when they are satisfied with the store atmosphere (Berry et al. 2002). This study identifies how the digital atmosphere affects consumers' purchasing process based on the AIDSAS model.

Consumers become aware of the digital atmosphere when they see the large size of digital signage installed in the store; thus, they pay more attention to the store. Attention is the first step, a cognitive step, in the AIDSAS model (Ashcroft and Hoey 2001).

This attention then attracts consumers' interest, which is the affective step (Ashcroft and Hoey 2001; Wiyaya 2012; Hassan et al. 2015). Once the atmosphere draws consumers' attention, they become interested in what products are being sold and what services are being offered in the store (Wiyaya 2012; Hassan et al. 2015). Thus, the following hypothesis was developed.

H1: The greater the attention to the digital atmosphere of a retail store, the greater the interest in products in the retail store.

Retailers put enormous effort into getting consumers interested in their products and the brand (Broeckelmann 2010). Interest is created when consumers are motivated to seek out the products (Baca et al. 2005). Desire is when consumers are motivated to take action because the merchandise will satisfy their needs (Prathapan et al. 2018). Interest leads to a desire (buying motive) to purchase the products and/or to use the service offered (Hassan et al. 2015). Digital displays installed in store stimulate customers' interest in products and allow them to operate the touch screens for themselves to search for product information and to see their outfits on the screen wall. Touch screen technology also allows consumers to easily search and find detailed information about products. Furthermore, interactions with these digital devices can make consumers feel more attached to the products and focused on buying. It is expected that the interest generated through this process motivates consumers to have the desire to buy (Hassan et al. 2015). Thus, the following hypothesis was developed.

H2: The greater the interest in the products in the retail store, the greater the desire to obtain the products in the retailer store.

Lastly, desire can prompt consumers to give positive evaluations of both the store and the products, and thus positively influence their behavioral responses such as purchase intention (Hassan et al. 2015). Desire is also a stage when consumers are motivated to purchase a certain product, making it an antecedent for consumers to search for further information about the brand and/or product (Wiyaya 2012). Wei and Lu (2013) applied the AIDA model by modifying it to the AIDMSAS model. They argued that the search and sharing stages are important for consumers in the Web 2.0 era. This model fits consumers' current purchasing behavior such as searching and sharing, which has become more diverse in the Web 2.0 era (McGee 2017; Solomon 2018). Therefore, this study investigates the effect of desire on consumer behaviors including searching, sharing, and purchase intention.

Search and sharing intention are important because they have a direct and indirect effect on purchasing decisions as part of the consumption behavior before and after the purchase. Consumers, especially millennials, usually search for information about the products they want to buy from online reviews and SNS postings before they make a purchase (McGee 2017). After the purchase, they are also more willing to share their opinions and experiences about the product and/or service on SNS (McGee 2017; Solomon 2018). The content shared by consumers (e.g., reviews regarding products and/or brand) will then be searched by other consumers before they purchase. Sharing experiences on SNS is an ICT-facilitated word-of-mouth behavior. Word-of-mouth sharing has been a significant research topic for a decade as consumers tend to trust information more from other consumers than any other type of commercial advertisement (Richins 1983; Schiffman and Kanuk 1997). Information-savvy consumers also have more trust

in online word-of-mouth information that they can easily search on the Internet including social media (Mangold and Faulds 2009; Kotler and Armstrong 2010). Consumers' online reviews of products and/or brands are shared on social media for other consumers, and it can be influential as more consumers share with others (Vollmer and Precourt 2008). When the shared word-of-mouth information contains rather positive content, companies may be able to reduce their marketing costs (Mangold and Faulds 2009). However, although few studies have shown that desire has a significant effect on sharing and search intention, it can be predicted that consumers with a purchasing motivation for product incentives (i.e., desire) will search and share product information.

Sugiyama and Andree (2010) also argued that the AISAS model is less likely to be a linear step-by-step process; rather, consumers may show behavioral responses (search, share, action) simultaneously after they pay attention, are interested, and have desire for a product.

Therefore, we expect that in-store experiences enhanced by the digital atmosphere would draw consumers' attention to the retail store and increase their interest in the products in the store. In addition, the interest would generate the desire to obtain the products, and end with a behavioral response, such as search, action (purchase), and share. Thus, the following hypotheses were developed.

H3: The greater the desire to obtain the products in the retail store, the greater the endorsement intention to (a) search for, (b) take action – purchase, and (c) share about the product.

Differences between luxury and sports items

This study also examined whether the effect of digital atmospherics on consumers' perceptions and behaviors is different among stores carrying different types of products: luxury versus products. For instance, a luxury retail store sells high quality products using images that convey sophistication, affluence, and high class (Bourdieu 1984; Holt 1995; Kapferer and Bastien 2009; Chadha and Husband 2010; Kapferer and Bastien 2012; Okonkwo 2016) as well as being creative and unique (Kapferer and Bastien 2009, 2012). In contrast, for sports products and their retail stores, consumers focus on functionality and convenience (Choi and Lee 2011). This means that consumers expect and want different parts of luxury brands and sports brands respectively.

Despite these differences, both many retailers including luxury and sports retailers need to utilize information and communication technology by incorporating digital signage in a store (Grewal et al. 2017). From a consumer's perspective, they would like to use digital devices such as their mobile devices and/or in-store interactive digital screens to search for information to make a purchasing decision. It is also is advantageous for luxury retailers to apply ICT in a store to collect elaborate personal information from consumers to provide advanced personalization services to consumers (Jain et al. 2017). Acquiring high-quality personal information is more feasible due to the compatibility between in-store digital devices and consumers' mobile devices. Sports retailers also attempt to showcase advanced technology material and smart clothing every season. For example, they launch smart products in collaboration with a mobile company that are designed to help consumers' exercise using a mobile application so they can easily check their athletic performance (Draper 2018).

Although digital atmospherics can benefit both luxury and sports stores and brands, how consumers evaluate digital atmospherics and the extent to which digital atmospherics affect consumer behavior can differ given the unique characteristics of products and consumer expectations. For example, consumer expectations for luxury and sports stores are different. In addition, the merchandise consumers want to purchase, the consumption value, and the purpose of the purchases are different in these two types of stores. For instance, when consumers want to buy sneakers, a luxury brand will be meaningful in term of the social or emotional value compared to the functional value. In contrast, utilitarian and functional value will be more important when buying sneakers from sports brands. Therefore, it is expected that there will be differences in the processes of consumers' purchasing decisions in luxury stores versus sports stores with large-sized digital signage to deliver information. Our study explores this aspect. Given the lack of research on these differences, however, we formulate a hypothesis predicting differences without specifying particular functionalities to allow them to be empirically identified.

H4: Luxury retail stores and sports retail stores with a digital atmosphere will have differences in the average value in each process of the consumer behavior model.

Method

Stimuli development

The stimuli for our study included the typical digital signage used in many retail stores. Digital signage attracts consumers' attention since it is active media (Bauer et al. 2012), and creates a user experience at a touch point for purchasing by adding interactive functions. It is also the most widely used medium in actual fashion retail stores.

Especially, we chose luxury and sports products since retail stores carrying these two types of products have been at the forefront of incorporating technology to enhance consumers' experiences in their stores. For example, the British luxury fashion brand Burberry has used RFID technology to offer consumers direct and real-time inventory information in store (Jain et al. 2017). For example, touch screens installed in their stores allow consumers to design and order their own trench coats. Through large-screen displays in the store, Burberry continuously displays advertisements containing product information so consumers can learn more about the brand. Stores that sell sports brands have also actively incorporated technology to positively amplify services and experiences in store. For example, Adidas and Nike have installed treadmills and running tracks with oversized digital displays to enhance the consumer experience with new products. They measure consumers' heart rate and pulse while they are running with the displayed shoes (Draper 2018). They have also installed touch screens in the stores so customers can find detailed information about the products including size, color, and inventory. All of these innovations are designed to create the digital atmosphere and convey a technologically advanced brand image. These digital atmospherics have been found to have a positive effect on viral marketing and purchasing (Surchi 2011). Both Burberry stores and Adidas stores that utilized in-store digital technologies have received positive feedback, particularly from younger generations (Berg 2016; Lauchlan 2017).

Thus, we focus on stores' digital signage to examine the effect of the digital atmosphere on consumers' internal evaluations in fashion retail stores and to measure how this atmosphere affects online behavior and purchase behavior. The photos are of two

existing luxury and sports stores that were used as stimuli. The three photos of the luxury store included (1) a photo with a large digital screen on one wall of the store, (2) a photo with digital devices to enable consumers to search products, and (3) a photo of consumers searching for information in front of a large touch screen. The other three photos were used as stimuli for the sports store including (1) a photo with a large digital screen in the center of the store, (2) a photo of a treadmill connected to digital signage, and (3) a photo of consumers searching for information in front of a large touch screen (the same people as in the luxury store). The descriptions of the technology devices used in each picture were also presented along with the pictures of actual stores where consumers could find such devices.

Survey procedure

At the beginning of the questionnaire, three photos of actual digital signage from luxury stores (or sports stores) were presented as stimuli. The photos showed a brand advertisement on an oversized digital display that was installed in the most prominent place in the store, such as an entire wall or the center of the store. Other photos showed consumers directly managing the touch screens in front of the displayed products to get information on colors and sizes. Additional descriptions were under the photos (e.g., "You can search for in-store inventory, colors, and sizes, and can purchase directly through the touch screen without standing in line"). After reviewing the stimuli, participants were asked to fill out the questionnaire to measure the variables included in our study.

Measures/data collection

The data were collected in Korea via an online survey administered by a market research agency. Data were collected from 212 responses. Among these, 103 responses were gathered on luxury stores and 109 were on sports stores. Frequency analysis and crossover analysis were conducted to identify the characteristics and differences between the luxury retail store respondents and the sports store respondents. Demographic information on the 212 participants' age, gender, and marital status was gathered, and no differences were found in the groups in terms of gender, educational background, and monthly household income of the respondents (shown in Table 1).

To verify the AIDSAS model, which is an expansion of consumer behavior in the AIDA model, the measures of our variables were adopted from previous studies (Wei and Lu 2013; Hassan et al. 2015). The scales in Hassan et al. (2015) and Wei and Lu (2013) were partially modified and applied to this study. Attention, interest, and desire included three items each. Wei and Lu (2013) scales were also adopted for search (4 items), action (4 items), and sharing (3 items) to examine consumer shopping behavior.

All items (except for demographic characteristics) were measured on a 5-point Likert scale (1 = strongly disagree; to 5 = strongly agree). Specific items used to measure our variables are presented in Table 2. The data were statistically analyzed using SPSS 21.0 and AMOS 18.0.

Table 1 Demographic characteristics of the respondents

Demographic	Range	*n*		Total *n*	χ^2	Prob.
		Luxury (*n* = 103)	Sports (*n* = 109)			
Age	Men	52	56	108	.017	.897
	Women	51	53	104		
Marriage	Yes	36	29	65	1.735	.188
	No	67	80	147		
Education	High school	11	11	22	1.677	.795
	University Student	23	28	51		
	University	58	62	120		
	higher	10	8	18		
	Etc.	1	0	1		
Occupation	White	52	51	103	5.576	.782
	Non-white	16	20	36		
	Housewife	4	4	8		
	Student	26	28	54		
	Etc.	5	6	11		
Monthly average household income (unit:won)	Under 2 million	12	19	30	12.339	.195
	2 ~ 4 million	34	45	79		
	4 ~ 6 million	34	32	66		
	6 ~ 10 million	17	11	28		
	Over 10million	6	2	8		

Results

Preliminary analysis

Reliability and validity

To test the reliability and validity of the scales, we conducted exploratory and confirmatory factory analyses. With the data ($n = 103$ for luxury, $n = 109$ for sports), we first confirmed that the Cronbach's α coefficients for the variables ranged from 0.781 to 0.911, as shown in Table 2. Cronbach's α coefficients above 0.7 represent the measurements of reliability (Henseler et al. 2009; Hair et al. 2013). Validity of the constructs of the seven latent variables was also examined to check whether the measurements of this study were appropriate. First, the results of the confirmatory factor analysis indicated that our measurement model was a good fit (χ^2(d.f) = 295.922(155), GFI = .878, CFI = .960, IFI = 0.961, RMSEA = 0.066). Convergent validity, which examines the degree to which two or more measurement tools have a correlation with a single factor, can be measured as average variance extracted (AVE) and construct reliability (CR). The factor loadings of all indicators were greater than 0.60, which indicates that the measures all had acceptable convergent validity for each construct (Henseler et al. 2009; Hair et al. 2013). The CR ranged from 0.978 to 0.990, and the AVE ranged from 0.701 to 0.849, as shown in Table 2. Thus, we confirmed that the data met the required levels of the constructs as suggested by Fornell and Larcker (1981): .7 for the CR and .5 for the AVE.

We also checked the discriminant validity (i.e., one factor differs from another) by calculating the square of the correlation coefficients between the AVE of each latent variable and each of the two variables (Fornell and Larcker 1981). Discriminant validity is demonstrated when the AVE is larger than its squared correlation coefficients

Table 2 Results of the confirmatory factor analysis measurement

Factor	Items	Standardized Factor loading	*t*-value	AVE	CR	α
Attention	I think this store					
	… attracts me	0.688	–[a]	0.701	0.978	0.781
	… draws my full attention	0.899	7.544			
	… catches my eye	0.906	7.660			
Interest	After watching this store					
	… I am interested in the product.	0.885	–[a]	0.797	0.986	0.872
	… I like the product	0.937	16.860			
	… I have a good impression of the product	0.855	13.464			
Desire	After watching this store					
	… I think I need the product	0.887	–[a]	0.838	0.988	0.902
	… I want to have the product	0.928	16.652			
	… I hope I can get the product	0.930	15.704			
Search	After watching this store, I think					
	… I will search for information about the product on the Internet	0.856	–[a]	0.779	0.987	0.905
	… I will search for online word-of-mouth information about the product on the Internet	0.904	15.988			
	… I will compare prices of the product on the Internet	0.871	13.172			
	… I will visit the official brand website on the Internet	0.898	13.345			
Action	After watching this store, I think			0.735	0.990	
	… the product in the review is worth purchasing	0.844	–[a]			0.878
	… I am willing to buy the product	0.877	13.517			
	… the product will benefit me	0.886	13.595			
	… I will definitely buy this brand if I have enough money	0.821	11.558			
Share	After watching this store, I think					
	… I am willing to tell my friends about this store	0.922	–[a]	0.849	0.989	0.911
	… I intend to share information about the products with my friends	0.942	19.249			
	… I will share my experiences and comments about the products on the Internet	0.899	16.336			

χ^2(d.f) = 295.922(155), Normed χ^2 = 1.909, p = .000

GFI = .878 CFI = .960 TLI = .951, IFI = 0.961, RMSEA = 0.066

[a] Unstandardized estimates were fixed by a value of one, so the t-value is not given

in the rows and columns. The square of the correlation coefficients between all the latent variables in our model ranged from 0.370 to 0.637 and were smaller than the AVE index for each variable with a range of 0.735 to 0.849 (Table 3). Thus, we concluded that our measures satisfied discriminant validity.

Hypothesis testing

To test the hypotheses depicted in our model, we conducted structural equation analysis using AMOS. The model's goodness of fit was within the standard range (χ^2 (df) = 366.290 (165), normed χ^2 = 2.220; p = 0.000; CFI = 0.943; GFI: 0.85; IFI = 0.944; TLI = 0.935; RMSEA = 0.076). Specifically, in the retail store with installed digital devices, consumers tended to pay attention to the digital atmosphere, which focused

Table 3 Validity of measures: the squared correlation and AVE of variables

Variable	Attention	Interest	Desire	Search	Action	Share
Attention	0.701[a]					
Interest	0.543[b]	0.797				
Desire	0.421	0.637	0.838			
Search	0.391	0.557	0.514	0.779		
Action	0.370	0.564	0.654	0.540	0.735	
Share	0.406	0.461	0.507	0.590	0.582	0.849

[a] Numbers on the diagonal are AVE

[b] Numbers off the diagonal are the squared correlation between the construct

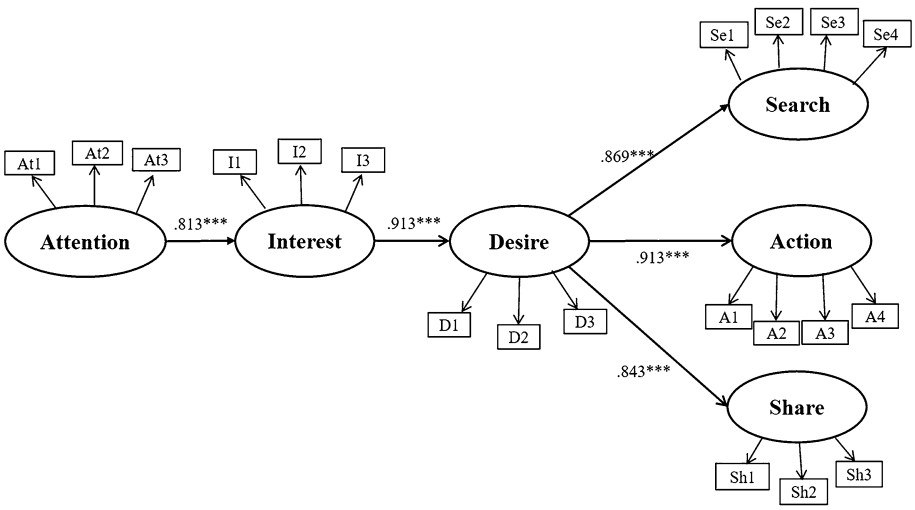

Fig. 1 Summary of the SEM analysis

consumers' interest on the displayed products in the retail store ($\beta = .813$, $p < 0.0001$). The results also show that consumers were interested in the products displayed in the digital atmosphere retail store and they wanted to own the products ($\beta = .913$, $p < 0.0001$). Thus, H1 and H2 are supported.

In addition, the results show that the desire to obtain products in the digital atmosphere retail store had a significant effect on consumers' behavioral responses. First, there was a positive effect of the desire to obtain products in the digital atmosphere retail store on online search intention ($\beta = .869$, $p < 0.0001$). Thus, H3a is supported. Moreover, the desire to obtain products in the digital atmosphere retail store had a positive effect on intention to share ($\beta = .843$, $p < 0.0001$). Thus, H3b is supported. H3c was to identify the effect of the desire to obtain products in the digital atmosphere retail store on purchase intention ($\beta = .913$, $p < 0.0001$). The result shows that the positive evaluation of the products on the environment of the technology-equipped retail store led to purchase intention. Thus, H3c is supported (Fig. 1).

Table 4 Results of the one-way ANOVA analysis

Stage	Mean (S.D)		*F*-value	Prob.
	Luxury ($n=103$)	Sports ($n=109$)		
Attention	3.052 (0.905)	3.844 (0.649)	54.128	0.000
Interest	3.003 (0.897)	3.584 (0.726)	26.988	0.000
Desire	2.877 (0.903)	3.517 (0.790)	30.238	0.000
Search	2.959 (0.888)	3.534 (0.803)	24.578	0.000
Action	3.080 (0.734)	3.500 (0.677)	18.728	0.000
Share	3.016 (0.909)	3.526 (0.757)	19.778	0.000

Difference in behavioral intention by store type: luxury vs. sports

As seen in Table 4, the results support H4. Specifically, we found that the respondents in the sports stores that displayed technological instruments paid more attention to the store itself than the respondents in the luxury stores with a digital atmosphere ($M_{luxury}=3.052<M_{sports=}3.844$; $F=54.128$, $p<0.001$). Respondents showed more interest in the products in the sports retail store even though both the sports and luxury retail stores had installed digital technologies in the stores ($M_{luxury}=3.003<M_{sports=}3.584$; $F=26.988$, $p<0.001$). The desire to obtain products in the digital atmosphere sports retail store was higher than the luxury retail store ($M_{luxury}=2.877<M_{sports=}3.517$; $F=30.238$, $p<0.001$). Furthermore, consumers' intention to search for products ($M_{luxury}=2.959<M_{sports=}3.534$; $F=24.578$, $p<0.001$), to share information about the products in the store with peers, friends, and other consumers ($M_{luxury}=3.016<M_{sports=}3.526$; $F=19.778$, $p<0.001$), and to purchase products ($M_{luxury}=3.080<M_{sports=}3.500$; $F=18.728$, $p<0.001$) in the retail store were all higher in the sports retail store than the luxury retail store.

By installing technological devices, consumers experience digital atmosphere in both sports and luxury retail stores, but they show different processes of consumer purchasing patterns, AIDSAS, and different behavioral intention. The average value of each process of consumer purchasing pattern was statistically significant and higher in the sports retail store than the luxury retail store. This result confirms that the digital atmosphere is more effective with consumers in the sports retail store than the luxury retail store.

Discussion

Influence of digital technology

Fashion retailers have strategically adopted digital devices in their stores to offer consumers immersive in-store experiences. Digital devices installed in retail stores have been found to shape customers' experiences and decision-making by improving the quality and delivery of information (Dennis et al. 2012). This trend has grown significantly through the development of ICT and the consumer trend of demanding greater convenience and instant services. This study demonstrates the pivotal role of an in-store digital atmosphere in enhancing product purchases as well as encouraging e-word-of-mouth sharing of one's experience. Moreover, a technological atmosphere with large-sized digital displays promotes interest in the products, and intensifies the desire to own the products displayed in the fashion retail store.

The results of this research can be summarized as follows. First, the results confirm that the digital atmosphere in retail stores can be a significant tool to attract consumers' attention to the store. We find that attention is a key antecedent to interest, desire, and behavioral responses (search, action, and share) in consumers' purchasing patterns triggered by digital atmosphere. This could mean that if the digital atmosphere fails to attract enough attention from the consumers, the store will not be able to induce desirable and necessary subsequent reactions. Particularly when retailers work with small devices and kiosks to promote digital atmosphere, it is important to place them in a strategic location that can attract the maximum level of attention to the devices.

The results also emphasize that oversized digital displays and touch screens installed in stores are worth using to offer product information and help consumers positively perceive the products. This positive evaluation of the products also enhances consumers' intention to share the product information acquired directly from their experience in the store on social media, leading to successful word-of-mouth advertisement. In general, when consumers visit a fashion retail store and have a new and unique experience, electronic word-of-mouth (eWOM) advertising is expected. When consumers voluntarily share user-generated content with the majority of other consumers, it can be very effective (Vollmer and Precourt 2008); hence, companies should take the opportunity to promote brands and products through oversized digital displays and touch screens (Mangold and Faulds 2009). Our study indicates that digitally enhanced retail stores can significantly increase consumers' willingness to share their experiences online.

Consumers are also more likely to search for products that are displayed in a digital-atmosphere store before purchasing using other channels. The adoption of digital installations in the store and consumers' own digital devices including cellphones and wearable devices will continue to increase. Consumers will quickly become accustomed to searching and purchasing products using in-store digital devices, sharing their experiences via their mobile phones, and searching for other brands of products. These processes are expected to become more common in the near future. This suggests that in the omni-channel era, companies should disclose transparent and consistent policies related to prices and product information because consumers can quickly search for this information using mobile or/and digital devices in a purchasing context.

Finally, the results of this study show significantly positive effects of a digital atmosphere in both sports and luxury retail stores on consumer's purchasing patterns. However, we find these positive effects are more pronounced for sports retail stores than luxury retail stores. This may be due to the stronger desires for consumers to receive personal touches in luxury stores than they might expect in stores selling sports equipment (Cillo et al. 2016). This could mean that utilizing digital devices in luxury retail stores may not be as effective as in sports retail stores. This may further suggest that luxury retail stores may utilize digital devices for inventory management, and to provide product information, while still maintaining a high level of in-store personal services.

Implications, limitations, and future research

The development of digital technology and ICT has brought about a significant transformation in the VMD of fashion stores. This study is meaningful in both academic and business fields. The current study contributes to the academic literature in several ways.

First, the study contributes to understanding consumers' behavior and decision-making processes related to the digital atmosphere of fashion retail stores based on the AIDSAS model. This empirical study using the AIDSAS model reveals the concrete mechanism of the effect of the perceived store atmosphere on consumer behavior because the AIDSAS model makes it possible to uncover the stepwise relationships between attention to the store atmosphere-interest/desire and to the products-behavior response.

Although numerous previous studies have demonstrated the pivotal role of the atmosphere in fashion retail stores, this model makes the study results more robust, and is expected to be applied in future retail atmospheric studies. In addition, this can fill the gap in the literature in the context of the significant transformation of the retail environment using in-store digital devices by systematically identifying the effects of the digital atmosphere on consumer behavior.

This study also contributes to the digital technology application literature by investigating the effect of the retail store's digital atmosphere on consumers' decision-making process. Through AIDSAS, the underlying model of this study, it was revealed that the digital atmosphere in fashion retail stores affects consumers' cognition of a retail store and products displayed in the store and induces positive emotion and buying motive to encourage them to buy. Therefore, it is necessary to actively utilize digital devices in the store. In particular, fashion retailers can employ digital devices in their retail stores as marketing tools by promoting interaction between consumers and digital devices, which can be used in conjunction with the consumer's own mobile devices using technologies such as Bluetooth or Beacon.

Identifying the differences between technology used in the sports and luxury industries will provide practical implications that can be applied in the fashion industry. The results of this study indicated that the digital atmosphere has a higher effect on consumers' cognition (attention), affect (interest), buying motive (desire), and behavior intention (search, purchasing, sharing) in sports stores than in luxury stores. Sports brands including outdoor brands need to install digital devices in their stores to create a digital atmosphere to speed up consumers' decision making process. The results of this study suggest that fashion retailers, especially sports brand retailers, could employ large digital devices such as digital signage, treadmills that can measure heart rate and gait, and touch screens that allow customers to search for information such as size, color, inventory and product features. The use of such technology is expected to be effective in creating a digital atmosphere in fashion retail stores, especially sports stores.

We note, however, that the study was conducted in South Korea where the average population is highly receptive to technological advancement. An interesting future study may examine whether the relationships depicted in our model is consistent in other nationality or cultural contexts. Another limitation of this study is that consumers' perceptions toward different brands (i.e., Burberry vs. Adidas, Nike) were not considered as covariates. Future studies should include brand familiarity as a covariate or stimuli that need to be incorporated into fashion retail stores that are not branded but identified by the brand category (e.g., luxury vs. sports). In addition, more case analysis is needed in future research to determine whether the results of this study are generalized and applicable to the sports and luxury industries.

Another limitation of this study is that it did not compare consumer behavior in retail stores with a digital atmosphere and those without digital technology. This is an opportunity for future study.

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Authors' contributions
HYK analyzed and discussed the result with YL, and EC. YL developed research background. EC discussed the result with HK. YJJ collected literatures and data. All authors read and approved the final manuscript.

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Availability of data and materials
The datasets used and analyzed during the current study are available from the first author on reasonable request.

Competing interests
The authors declare that they have no competing interests.

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